

CLAIM OBJECTIONS

The Examiner has objected to claim 9 because the claims duplicates the phrase “of the”. Applicants have remedied this objection by deleting the duplicate “of the”.

The Examiner has rejected claim 12 (a use claim) under 35 U.S.C. 112, second paragraph, and under 35 U.S.C. 101. Applicants have remedied this objection by deleting without prejudice claim 12.

REMARKS AND AMENDMENTS

The Examiner has not raised a 35 U.S.C. 102 rejection. Thus the Examiner is of the position that the present invention meets the requirements of 35 U.S.C. 102, and is considered novel.

The Examiner has rejected claims 1-12 of the present invention under 35 U.S.C. 103(a) over Lange (US 6,258,761) in view of Andrew (US 5,585,335) and Caruso (US 4,104,177).

The Examiner is of the position that Lange discloses a lubricating composition comprised of an esterified interpolymer derived from monomers of vinyl aromatic monomers and carboxylic acid derivatives. The Examiner is of the position that the interpolymer of Lange overlaps with the polymer of the present invention. However, Lange does not disclose the lubricating composition as a grease composition.

The Examiner combines the teaching of Lange with Andrew and Caruso for their respective disclosure of thickening agents. Applicants respectfully traverse the combination of Lange with Andrew and Caruso would produce the present invention.

Lange discloses a lubricating composition containing an esterified interpolymer derived from monomers of vinyl aromatic monomers and carboxylic acid derivatives. The esterified interpolymer is suitable for improving viscosity and dispersancy of lubricating oils. Thus a person skilled in the art would contemplate employing in a lubricating oil a compound capable of improving viscosity and dispersancy. However, as a person skilled in the art knows, a compound capable of improving viscosity and dispersancy controls the thickness of the lubricant.

In contrast, Applicants submit that this is not the case for a grease. A grease is not a thick oil, but instead a grease is a thickened oil consisting of at least two well defined components (i) a thickener (may also be referred to as a gelling agent), and (ii) a fluid lubricant. Consequently a grease matrix is held together by internal binding

forces utilising the thickener to provide to the grease a solid character that is capable of resisting positional change. The information above is confirmed in excerpts from the attached standard textbook (see pages 306 to 308 of "Chemistry and Technology of Lubricants"). In addition, thickening agents for grease are disclosed on pages 313 to 316 of the attached standard textbook "Chemistry and Technology of Lubricants". Disclosed on pages 313 to 316 are a wide variety of thickening agents known to a person skilled in the art of preparing grease. It is the presence of the thickener that is believed to provide the grease matrix structure that results in a thickened oil (as defined by the present invention by the term grease) instead of a thick oil (as considered to be a lubricating composition of Lange).

As is described in the background section of the present invention, it is known to add polymers to a grease to decrease water wash-off, to increase water repellency, to decrease oil separation, to increase dropping points or cone penetration and as thickeners (see page 1, lines 15 to 19). However, the polymers have limited interaction with the thickener. This results in the grease being more susceptible to the effects of water, for example, water wash-off or decreased water repellency. Producing greases with poor water wash-off or water repellency decreases the longevity of grease and increases wear on the surface being lubricated (see lines 21 to 25). Thus if a person skilled in the art is able to identify a suitable means a grease with improved water repellence, or improved water wash-off would also improve thickening, increase longevity and decrease wear because the components required to make the grease are not adversely affected by water.

In view of the above, a person skilled in the art would not add the esterified interpolymer of Lange to a grease and have the expectation that it would be suitable for a grease composition to provide improved water repellence, or improved water wash-off. As is highlighted by the Examiner, Lange does not teach, suggest or otherwise disclose the suitability of the esterified interpolymer in a grease. Further, Lange does not teach, suggest or otherwise disclose water repellence or water wash-off properties of the esterified interpolymer.

In contrast the present invention has unexpectedly discovered that a grease composition containing the esterified polymer is capable of providing a grease with improved water repellence, and/or improved water wash-off properties.

Thus given that Lange does not disclose or contemplate the suitability of the polymers of the present invention in a grease, a person skilled in the art would have no motivation to combine Lange with Andrew and Caruso. In the alternative, if a person skilled in the art did combine the teachings of Lange with Andrew and Caruso, a person skilled in the art would not have had the expectation that such a combination would have provided the unexpected performance as has been identified by the present invention. Applicants respectfully request the Examiner to withdraw the 35 U.S.C. 103(a) rejection in view of the combination of Lange with Andrew and Caruso, and find all claims allowable.

If for any reason the Examiner believes that a telephone conference would expedite the prosecution of this application, I can be reached at the telephone number listed below.

The Commissioner is authorized to charge any required fees or credit any overpayment of fees to The Lubrizol Corporation Deposit Account No. 12-2275.

Respectfully submitted,
THE LUBRIZOL CORPORATION

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